REMARKS

Applicants, their principal representatives in German, and the undersigned have carefully reviewed the first Office Action of August 22, 2007 in the subject U.S. patent application, together with the prior art cited and relied on in the rejections of the claims. In response, the Substitute Specification, and various ones of the claims now pending in the application have been amended. It is believed that the claims now pending in the subject application are patentable over the prior art cited and relied on, taken either singly or in combination. Reexamination and reconsideration of the application, and allowance of the claims is respectfully requested.

Initially, during a review of the Substitute Specification of the application, as filed, the existence of several minor typographical errors was noted. The Substitute Specification is being amended to correct these minor errors. The correction of these errors does not raise any issues of new matter. Their entry is respectfully requested.

In the Office Action of August 22, 2007, the drawings were objected to as not showing the angle of the segment of a circle as recited in claims 86-89. This objection is respectfully traversed. Claims 86-89 all depend from prior dependent claims and all recite the segment of a circle which extends over an angle of between 10° and 45°. The claims that they depend from recite that the guide element has a web-facing side of a segment of a circle. Figs 2, 3, and 5-8 are all believed to show such a structure. In the Substitute Specification, the angle γ, as depicted in Figs. 5 and 6, is discussed in several locations, specifically at paragraphs 033 and 034. Specifically paragraph 034 recites an angle of between 10° and 45° for the angle γ. It is thus believed that the claim language recited in claims 86-89 is depicted at least in Fig. 6. Accordingly, the Examiner's objection to the drawings is respectfully traversed.

Claim 41 was objected to as having a typographical error. Specifically, the word "least" was set forth as "lest". Amended claim 41 rectifies that typographical error.

Claims 41-56, 65-70, 81, 82, 86, 87 and 94-99 were rejected under 35 USC 103(a) as being unpatentable over German document No. DE 93 11 113.4 to Zirkon in view of Japanese document No. JP 7-53102 to Takenaka. Claims 41, 42, 45 and 46 were rejected under 35 USC 103(a) as being unpatentable over German document No. DE 203 03 720 to Meitinger in view of Takenaka. Claims 42, 57, 59-61 and 63 have been rejected under 35 USC 103(a) as being unpatentable over Zirkon in view of U.S. patent No. 5,423,408 to Leidtke. Claims 42, 58 and 64 were rejected, also under 35 USC 103(a), as being unpatentable over Zirkon in view of U.S. patent No. 6,364,247 to Polkinghorne. Various ones of the dependent claims have also been rejected as being unpatentable over either Zirkon or Meitinger in view of either Takenaka or Leidtke, and further in view of various other secondary references. However, since claims 41 and 42 are the two independent claims now pending in the subject application, the bulk of the discussion will be directed to the rejections of these two claims.

Both claims 41 and 42 have been amended to more clearly define their respective inventions over the prior art cited and relied on. The amending of these two claims are directed to two separate facets of the same generic invention. Claim 41 has been amended to more clearly recite that the plurality of outward directed micro-openings in the wall of the at least second guide element are micro-bores. Claim 42 has been amended to recite that the second guide element has a load bearing support of an at least partially fluid-permeable support material and an outer layer which is non-supporting and which itself is constituted as a micro-porous, air-permeable material which is adapted to be contacted by the web. As will now be discussed in detail, both of these claims are believed to be patentable over the prior art cited and relied on.

Turning initially to the rejection of claim 41 over Zirkon in view of Takenaka, several differences are readily apparent. In the Zirkon document, which does not appear to have any English language abstract or equivalent, there are shown several printing units which each can be switched between an active position and a passive position. In each such printing unit, the

web 8 travels over a first roller 9 prior to its entry into the unit, and then travels either over or under a second roller 10 at its exit from the particular printing unit. The description of this reference in the Substitute Specification recites that these rollers are rotatably seated in lateral walls of the printing unit.

The Examiner's discussion of the structure of Zirkon is generally agreed with. Zirkon shows rollers 9 and 10 which are rotatable. The guide elements of the subject invention, as discussed in the Substitute Specification, and as depicted in the drawings are not described or depicted as rollers. Instead, the guide elements are intended not to rotate but instead to be positioned so that their resulting air cushions will be positioned in the area of each such guide element about which the web passes.

The secondary reference to Takenaka depicts a device that is usable to "convert" and to dry a web. A sintered metal roller bar is suspended in some manner and is used to form an air membrane. It is to be noted that Takenaka refers to the bar as a roller bar or a roll bar, thus at least implying that it is supported for rotation. It is also to be noted that Takenaka specifically recites that the roll bar is made of sintered metal. From the admittedly crude drawing of Takenaka, it appears that the whole bar is made of sintered metal.

Claim 41, as amended, recites that the second guide element has a wall including an outer surface having a surface area defining the guide element. Claim 41 does not recite that the guide element is a roller. Claim 41, as amended, now recites that there are a plurality of outwardly directed, penetrating bores configured as micro-bores in the wall of the at least second guide element. Each of these bores has a diameter of not greater than 500 μm. A density of these bores, per unit of surface area of the wall is at least 0.2/mm^2. A discussion of the structure and density of these micro-bores can be had at paragraph 043 of the Substitute Specification. A further description of these micro-bores is set forth at paragraph 050 of the Substitute Specification. By reviewing the latter discussion, it can be clearly understood that

these micro-bores are made using one of several possible techniques and that the bores are not merely the result of the use of a porous material.

Paragraph 043 of the Substitute Specification recites that the use of the penetrating bores 11, as seen in Fig. 7, is a separate embodiment of the invention. The first embodiment was the use of a micro-porous material, generally at 06 which is recited as being an outer layer on a support. This is the embodiment of claim 42.

If Zirkon and Takenaka were to be combined, the result would be the use of a sintered metal roller bar as the rollers of the Zirkon device. Such a combination would not render obvious claim 41, as amended. Sintered metal is essentially a porous metal that is formed by placing metal powder and binders in a mold and by subjecting the metal to heat and/or pressure. The result is a porous material, somewhat like a sponge, with pores extending in all directions. Such a sintered metal product has irregular air permeability and not great structural strength. In contrast, the wall of the guide element of claim 41 has a plurality of outwardly directed penetrating bores configured as micro-bores. These micro-bores have a diameter limit and a density per unit of surface area, which are both specifically recited in claim 41.

The sintered metal of Takenaka has pores directed in random directions and with non-uniform pore sizes. This arrangement is much less efficient than the provision of the plurality of outward-directed penetrating micro-bores having the size range and the density range set forth in currently amended claim 41. The combination of Zirkon and Takenaka would not render obvious the structure of the guide element as recited in currently amended claim 41.

Claim 42 of the subject application is directed to a second facet of the disclosed device. As recited in currently amended claim 42, and as discussed at paragraph 014 and further described starting at paragraph 030 of the Substitute Specification, and as depicted in Figs. 4, 5 and 6, the at least second guide element includes a load bearing support of an at least partially fluid permeable support material having a plurality of through openings. As may be seen in Fig. 4, the support is depicted at 07 and the plurality of through openings are depicted at 08. The

load bearing support 07 is provided with an outer layer which is non-supporting, as discussed at paragraph 030 of the Substitute Specification. That outer non-supporting layer is constituted as a micro-porous, air-permeable material having a plurality of micro-openings.

As discussed above, in connection with the rejection of claim 41 over Zirkon and Takenaka, the Zirkon reference is silent as to the structure of its rollers 9 and 10. The Takenaka reference describes its roller or roll bar as being made of a sintered metal which is provided with a plurality of micro-holes. There is no teaching, or suggestion in the Takenaka reference of the use of a load bearing support of at least partially fluid permeable material having a plurality of through openings and a separate outer, non-supporting layer of a micro-porous, air permeable metal.

In Takenaka, the entire roll or roll bar is made of a sintered metal. Such a material is inherently relatively weak because it is full of micro holes. It is therefore necessary that the thickness of the walls of such a sintered metal roll or roll bar be increased beyond what would otherwise be necessary if the roll or roll bar were not made out of such sintered metal. The increase in wall thickness, which is required to provide adequate structure strength, results in a roll or roll bar with greater resistance to fluid flow. Consequently, greater air pressure must be used and less uniformity of the resulting air cushion is the result.

The combination of Zirkon and Takenaka would not render obvious the structure of the present invention, as recited in currently amended claim 42. That combination fails to disclose, or to suggest the combination of a load bearing support material with a plurality of through openings, and a separate outer non-supporting layer, as recited in this claim. Thus, currently amended claim 42 is believed to be patentable over the combination of Zirkon and Takenaka.

Referring now to the rejection of claims 41 and 42 as being unpatentable over Meitinger in view of Takenaka, the same arguments, as set forth with respect to the Zirkon and Takenaka references are believed to be relevant. Initially, the undersigned notes that the Meitinger reference does not have an English language abstract or equivalent. The abstract of the

Meitinger reference is not of the German document cited and relied on by the Examiner, but instead is for a French document No. 2 850 901. In that abstract, it is recited that the rotary printing machine feeds a web of paper 1 between a pair of non-contact rollers 21 and 22. The web alignment between these rollers 21 and 22 is set up by shoes 5. These shoes 5, as depicted in Fig. 2, discharge compressed air via an air-permeable porous block 13. The compressed air is used to maintain a gap 14 between the web 11 and the block 13.

With respect to currently amended claim 41, the combination of Meitinger and Takenaka is not better than the combination of Zirkon and Takenaka. In Meitinger, the shoes 5 do not appear to be rotatable. In Takenaka, the roll or roll bar 10 may or may not be rotatable. In both of these documents there is recited an air permeable porous block or material. In Meitinger, the air permeable block 13 is part of a shoe 5 located on either side of the printing gap defined by the rollers 21 and 22. Neither of the Meitinger and the Takenaka references discloses, or suggests the use of the plurality of outwardly directed penetrating bores configured as micro-bores, and having the diameter limitation and the density per unit of the surface area of the wall of the second guide element, as recited in currently amended claim 41. Thus, claim 41, as currently amended, is believed to be patentable over this combination of references.

In claim 42, as currently amended, there is recited a load bearing support of an at least partially fluid-permeable support material having a plurality of through openings. The Meitinger reference appears to show each shoe 5 as a hollow conduit having an axial length extending parallel to the axes of rotation of the cylinders 21 and 22. A single passage, depicted in Fig. 2 as lying beneath the inlet 11, in the non-porous portion 12 of the shoe 5, is in fluid connection with a longitudinal bore 15 which, in turn, appears to extend to some length along the central axis of the shoe 5. That central bore 15 is defined on one side by the non-porous material 12 and is defined on its other side by the air-permeable porous block 13.

The combination of the teachings of the Meitinger document and the Takenaka document would not render obvious the subject invention, as recited in currently amended claim

42. As discussed above, Meitinger does not show a load bearing support of an at least partially fluid-permeable support material having a plurality of through openings. At best, Meitinger shows a solid material with a single fluid inlet that does not constitute a plurality of through openings which are in fluid connection with the outer, non-supporting layer of the porous air permeable material. The addition of Takenaka would, at best, limit the size of the holes in its recited sintered material to being micro holes with a diameter of 1-30 mμm. This combination would not render obvious the structure of the subject invention, as recited in currently amended claim 42. Thus, claim 42 is also believed to be patentable over the combination of the Meitinger and Takenaka references relied on in its rejection.

Turning now to the rejection of claim 42 as being obvious over Zirkon in view of the Leidtke patent, it is initially noted that Leidtke shows an air bearing with a single row of air flow apertures 18 extending in an axial direction of a tubular element 14. The specification of Leidtke recites that there can be one or more rows of such apertures, depending on how much surface area of the web 12 passes over the air bearing. In contrast, in claim 42, as currently amended, it is recited that the load bearing support is of a material that is at least partially fluid-permeable having a plurality of through openings. These through openings underlie an outer non-supporting layer constituted as a micro-porous, air permeable material. That outer, non-supporting layer is located on the at least partially fluid-permeable support material and is in fluid connection with the plurality of through openings in the support material.

In the Leidtke device, the inner support has one or several rows of apertures. These are aligned with only a portion of the outer tubular member 40. Additionally, the outer tubular member 40 is clearly self-supporting. It is described as being an elongated cylinder having a through bore extending between its ends. It can be press fit onto the inner tubular member 14. It is made of a porous plastic by extruding, molding, machining or the like. It is clear that the outer tube 40 of Leidtke is self-supporting and that it is not formed as a layer on the inner load bearing support, as recited in currently amended claim 42. The Zirkon reference adds no teachings of

relevance in this situation. As discussed above, Zirkon discloses the use of rollers which are supported for rotation. If the air bearings of Leidtke were to be substituted for the rollers of Zirkon, their teaching of only a few rows of air flow apertures 18 would not be appropriate.

In the rejection of claim 42 as being unpatentable over Zirkon is view of Polkinghorne, it was asserted that the secondary Polkinghorne reference discloses a load bearing, at least partially fluid permeable support 146 having a guide element. The outer layer 132 of that guide element 146 was asserted as being a micro-porous, air permeable material having a plurality of micro-openings.

In the Polkinghorne reference, the described invention is depicted in Fig. 2. A pneumatic superstructure 146 supports permeable flotation devices 118, 120, 122 and 124. A microporous sheet 130 is mounted to appropriate surfaces of the pneumatic support structure 146, which clearly is not a single roller. This microporous sheet 130 includes a microporous outer layer 132. As described at Column 3, lines 58 +, this layer 132 is preferably formed of a suitable metal, such as nickel, with a smooth exterior surface and an interior surface. Such a layer could hardly be considered as being non-supporting. A metal woven screen 134 underlies the metal sheet 132. Again, this metal woven screen 134 does not seem to be at all similar in structure to the structure recited in currently amended claim 42. It is not understood how the teachings of the Polkinghorne reference could be combined, in any reasonable manner, with the teachings of the Zirkon reference. The pneumatic support structure 146 of Polkinghorne is overlaid with the metal sheet/metal mesh composition 130/134, as depicted in Fig. 5. As also seen in Fig. 5, the two elements 130 and 134 are placed on the support structure 146 that has a plurality of holes 154. These holes 154 supply air to the surface of the support structure. The air passes through the woven metal mesh 134 and through the metal exterior layer 132, both of which again are clearly not non-supporting. Accordingly, it is believed that the subject invention, as recited in currently amended independent claim 42 is patentable over the combination of the Zirkon and Polkinghorne references, assuming that such a combination were possible.

The rejections of the various dependent claims have been noted. As indicated above, since currently amended claims 41 and 42 are believed to be patentable over the several combinations of references which were cited and relied on, it is believed that these dependent claims are also patentable.

The indication of the allowability of claim 84, if presented in independent form, is noted. It is believed that applicants are entitled to the scope of claim protection provided by currently amended claims 41 and 42, in view of the prior art cited and relied on. Accordingly, indicated allowable claim 84 has not been presented in independent form at this time.

The various other secondary references cited and relied on in the rejections of various ones of the dependent claims have been noted. As indicated above, since these dependent claims depend, either directly or indirectly from one or the other of believed allowable, currently amended independent claims 41 and 42, no additional discussion of those references is believed to be required.

SUMMARY

The Substitute Specification has been amended to correct several typographical errors, without the introduction of any new matter. Claims 41 and 42, as well as various ones of the dependent claims, have been amended. It is believed that the claims now pending in the subject application are patentable over the prior art cited and relied on in their rejections for the reasons set forth above. Allowance of the claims, and passage of the application to issue is respectfully requested.

Respectfully submitted,

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